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MANAGEMENT SYSTEM™

PERMISSIBILITY CHECKLIST [Document No.: M26-082-02, REV.: 04]

TO COMPLY WITH 30 CFR, PART 76.1814 (f)(1), THE ITEMS MARKED WITH A "W" MUST BE INSPECTED WEEKLY.

Diesel Engine

1. **[ ]** **It has been determined that the area in which tests are to be performed is in FRESH AIR.**

2. **[ ]** **The mining machine is equipped with a MWM model D-916-6 six cylinder diesel engine rated at 68 Hp at 2100 RPM..**

Intake System

The Intake System of this Safety Package includes an Intake Manifold, an Intake Adapter Box, and an Intake Flame Arrestor Assembly.

ILLUSTRATION NO 1
AIR INTAKE ASSEMBLY

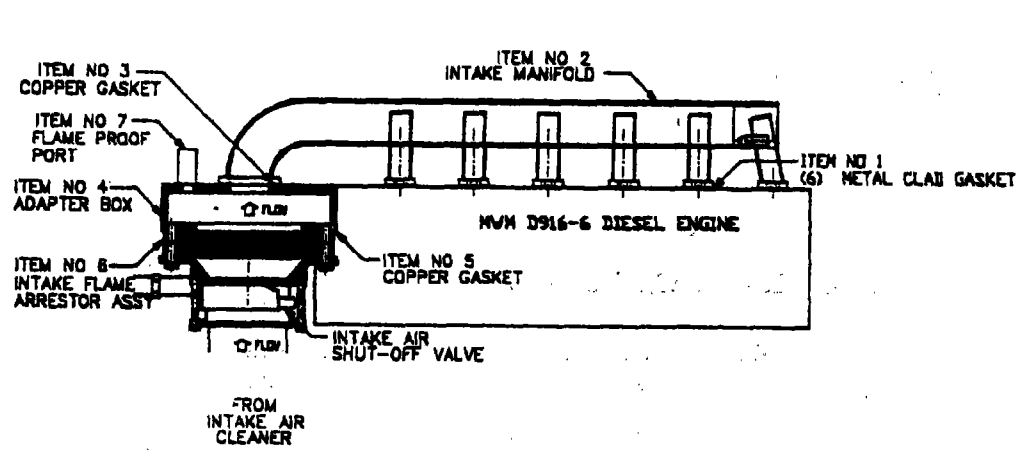

Illustration No 1 depicts the assembled intake system.

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W 3 . [ ] All components appear to be the same as shown on the Illustration No 1.

W 4 . [ ] The Intake Manifold, Item No 2, is securely attached to the Engine cylinderheads with nuts and lo&washers. There are six Metal Clad Gaskets, item No 1, one between each Cylinder Intake Port and Manifold Flange.

W 5 . [ ] There is no visible damage, Cracks or dents on the Intake Manifold.

W 6 . [ ] There is a Copper Gasket, Item No 3, between the Intake Manifold and the Intake Adapter Box, Item No 4, which is the square Flange. The Intake Adapter Box is securely attached to the Intake Manifold with four bolts and lockwashers.

W 7 . [ ] Another Copper Gasket, Item No 5, is installed between the Intake Adapter Box and the Intake Flame Arrestor Assembly, item No 6. The Intake Flame Arrestor Assembly is securely attached to the Intake Adapter with six bolts and lockwashers.

W 8 . [ ] Item No 7 is a Flameproof Pressure Port. The hose is connected to the side of the component and a plug is securely installed at the end. A drawing of the Flameproof Port is shown on Illustration 4.

W 9 . [ ] Illustration No 1 shows the Intake Flame Arrestor Assembly, Item No 6. It is welded together as a complete assembly

1 0 . [ ] A 0.018" diameter wire gauge must not pass through any of the triangular openings, as shown on Illustration No 5.
(See also Document M26-082-09 for Inspection Instructions.)

1 1 . [ ] The flame arrestor core is not visibly damaged.

1 2 . [ ] Reinstall the Intake Flame Arrestor. Tighten all bolts.

W13. [ ] Visually inspect the entire intake system for damage; There are no loose connections, cracks, missing plugs on ports or missing components.

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Exhaust System

The exhaust system of this Safety Package includes a Heat Exchanger, an Inby Flame arrestor, a series of Exhaust Pipes and flanges, a Filter Housing with a Disposable Paper Element Exhaust Particulate Filter and an Outby Flame Arrestor.

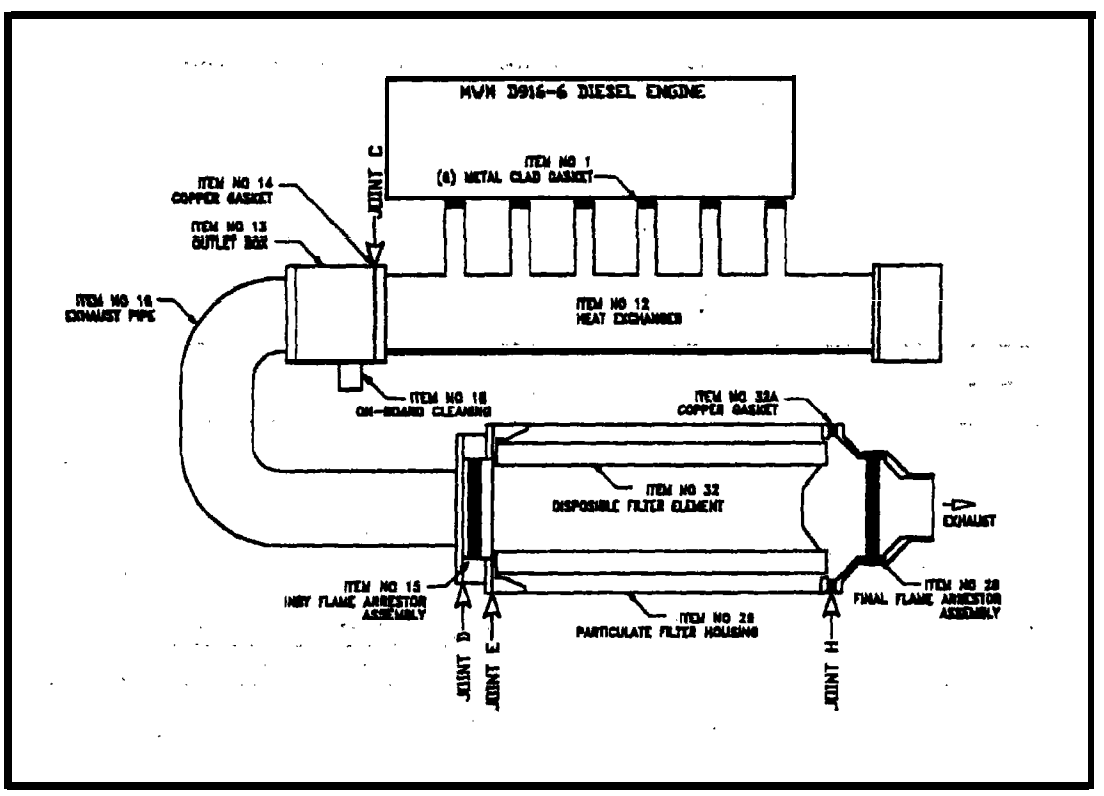

Illustration No 2 depicts the assembled Exhaust Cooling System.

W 14. [ ] All components appear to be the same as shown on lllustration No 2. Than appears no visible damage.

W 15. [ ] The Heat Exchanger, Item No 12, is securely attached to the Engine Cylinderheads with nuts and lockwashers. There are six Metal Clad Gaskets, Item No 1, one between each Cylinder head Exhaust Port and each Heat Exchanger Inlet Flange.

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W17. [ ] There is no visible external damage and no coolant leaks to the Heat Exchanger Assembly.

W18. [ ] Item No 12 is the Heat Exchanger and Item No 13 is the Exhaust Outlet Box. A Copper Gasket, Item No 14, is installed between both of them, shown as joint C on Illustration No 2. The components are securely held together with bolts and lockwashers or studs, nuts and lockwashers.

W19. [ ] Item No 16, shown on Illustration No. 2, is the lnby (Exhaust) Flame Arrestor. Six bolts with lockwashers securely hold theflanged Exhaust Pipe, Item No 16, and the lnby (Exhaust) Flame Arrestor to the Exhaust Outlet Box, Item No 13. A 0.004" Feeler Gage can not be inserted at these two joints, shown as joint D and E on Illustration No 2.

W20. [ ] Item No 18 is the Water Injector for the On-board Cleaning System. The component is tightly installed into the Exhaust Outlet Box, Item No 13. The hose is connected to the side of the component.

W21. [ ] Item No 17, its location shown on Illustration No 3, is a Flameproof Port for the total Exhaust Gas Backpressure. It is located on the inlet side of the Exhaust Outlet Box. The hose is connected to the side of the component and a plug is securely installed at the end of the component. See also Illustration 4 for a drawing of the Flameproof Port.

W22. [ ] Item No 19, its location shown on Illustration No 3, is another Flameproof Port for monitoring the pressure upstream of the Flame Arrestor. It is located at the outlet section of the Exhaust Outlet Box. The hose is connected to the side of the component and a plug is securely installed at the end; See also Illustration 4 for a drawing of the Flameproof Port.

W23. [ ] Item No 20, shown on illustration No 3, it the Exhaust Gas Temperature Gauge Sensor. It is located at the Exhaust Cutlet Box, Item No 16. The connection is secure and tight.

W24. [ ] Item No 22, shown on Illustration 3, is the Exhaust Gas Temperature Shut down Sensor. The Sensor is tightly Installed at the outlet side of the Outlet Box. See also the section on Shut Down Devices for further description.

W25. [ ] Item No 26, its location shown on Illustration No 3, is another Flameproof Pressure Port for monitoring the exhaust backpressure downstream of the Flame Arrestor. The hose is connected to the side of the component and a plug is securely installed at the end. See also Illustration No 4 for a drawing of the Flameproof Port.

W26. [ ] Item No 27 is the High Coolant Temperature Shut down Sensor. The Sensor is tightly installed at the Exhaust Outlet Box.

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Exhaust Filter Assembly

W26. [ ] The Outby (Exhaust) Flame Arrestor is item No 28 in illustration 2. It is securely attached between the End Outlet Flange of the Exhaust. Particulate Filter Housing, item No 29, with eight bolts and lockwasher.

W27. [ ] A Copper Gasket is installed between the Filter Housing End Outlet Flange and the Inlet side of the Flame Arrestor, on Illustration No 2.

W28. [ ] Remove the Flame Arrestor, Item 28, from the Exhaust Particulate Filter Housing. A Disposable Paper Filter Element, item No 32, is installed within the Fitter Housing. The end of the Filter element sticks out slightly beyond the Endplate Flange (approximately 1/8 inch).

W29. [ ] The Filter Element must be marked "DST M33" on its end.

W30. [ ] Inspect the Outby (Exhaust) Flame Arrestor. There is no apparent damage to the crimped ribbon core of the Flame Arrestor.

W31. [ ] Once every six months, remove the Outby (Exhaust) Flame Arrestor. There is no apparent damage and an .018 inch plug gauge will not pass through any of the triangular openings. The proper procedure is outlined on Document M26-082-09.

W32. [ ] Reinstall a Filter Element, item No 32 (Replace with a new Filter Element if necessary) and the Flame Arrestor Assembly, hem No 28. Make sure the Filter Element has a Gasket, Item No 32A, attached. The studs, nuts and lockwashers holding the Flame Arrestor Assembly to the Filter Housing must all be installed and tight.

W33. [ ] A Copper Gasket is installed between the Filter Housing End Outlet and the Flame Arrestor Assembly.

Shut Down Devices

W34. [ ] There are two temperature sensors, one for high water temperature and one for high exhaust gas temperature.
Their locations are shown on Illustration No 3.

35. [ ] Test both temperature shutdown sensors as described below:

a. **( )** Remove water sensor and well. Place sensor and wall into a water/ethylene glycol mixture and heat. The valve must open at 200-210º and shut the engine down.

b . [ ] Remove gas temperature sensor with integral well. Place sensor and well into a non-flammable liquid, such as non-flammable transmission fluid, and heat. The valve must open at 275-285°F and the engine must shut down.

38. [ ] Reinstall both sensors.

W 37. [ ] With the accelerator pedal fully depressed and all gears and accessories disengaged, the engine speed indicated on the gauge in the operators cab does not exceed 2220 RPM

W 38. [ ] Run engine at high idle speed of 2220 RPM. The total intake vacuum shown in the operators cab must not exceed 20 inches H_2O.

W 39. [ ] Run engine at high idle speed of 2200 RPM. The total exhaust backpressure shown in the operators cab must not exceed 40 inches H_2O.

40. There are three pressure differential gauges located inside, inside a Diagnostic Box. The following inspection will be performed at high idle speed of 2220 RPM and the accelerator fully depressed.

A. Gauge A measures the pressure differential of the heat exchanger. The proper reading should be above 12" H_2O and below 35" H_2O. This gauge is installed for diagnostic purpose only and is NOT part of the permissibility check.

W W [ ]B. Gauge B measures the intake flame arrestor differential pressure. The minimum reading is at least 1" H_2O. A reading of less than 1" H_2O requires disassembly to check the flame arrestor.

W W [ ] c. Gauge C measures the inby exhaust flame arrestor differential pressure. The minimum reading is at least 2" H_2O. A reading of less than 2" H_2O requires disassembly to chock the flame arrestor

W 41. [ ] With the engine running, engage the engine stop switch in the operators compartment. Engine must shut down.

W42. [ ] With the engine at idle, activate the emergency shutdown valve. The engine must shut down.

42. [ ] If disassembly of the Flame-proof Port, shown on Illustration No 4 is required, remove the Pin B from the Body A. For n-assembly, Pin B must be tight to retain flame proof feature.

(This permissibility checklist contains 43 separate items to check. There are 9 pages and 5 illustrations.)

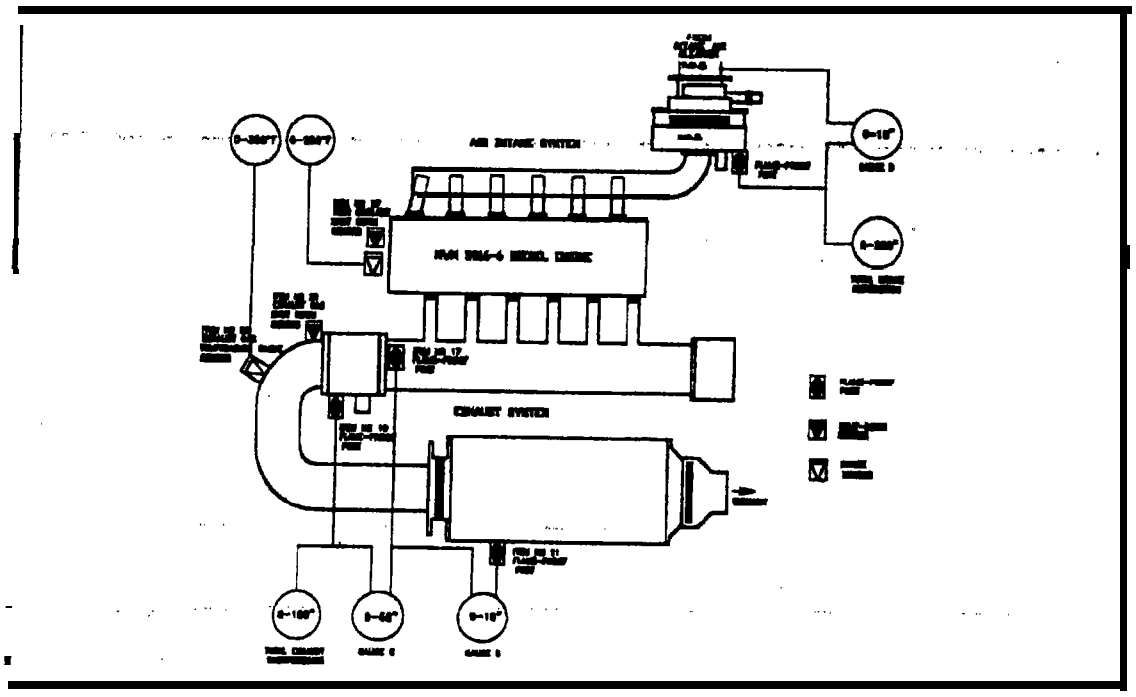

Illustration No 3 shows the location of the Differential Pressure Ports and Sensors.

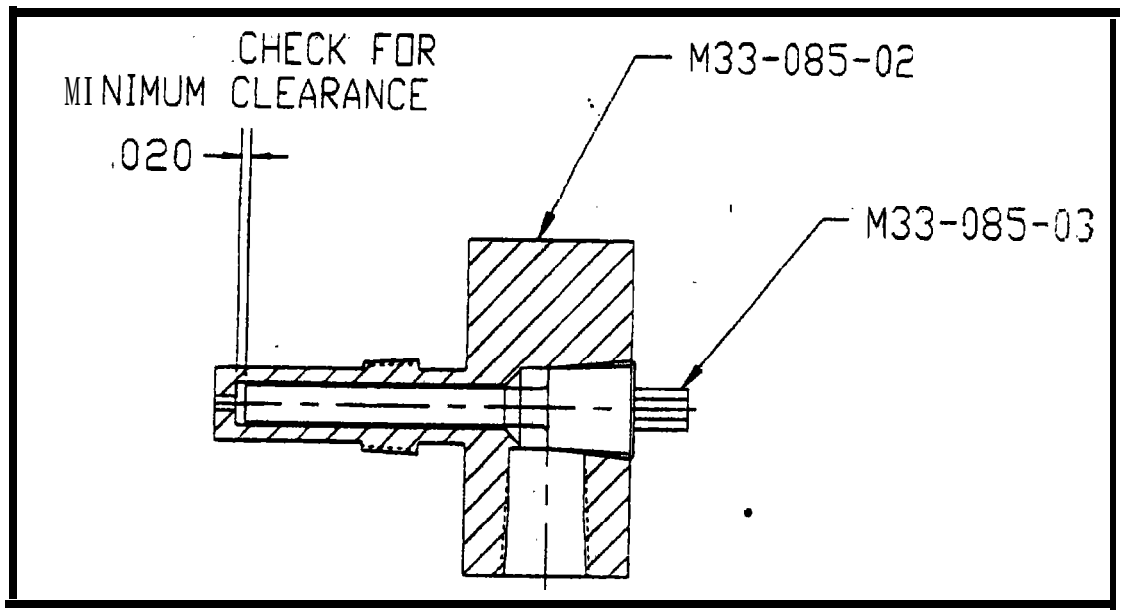

Illustration No 4 depicts a Flameproof Pressure Port.

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MSHA Inspection Procedure for Crimped Ribbon Flame Arrestors.

EVALUATION PROCEDURES FOR INSPECTING CRIMPED-RIBBON TYPE INTAKE FLAME ARRESTERS ON DIESEL-POWERED EQUIPMENT (AUGUST 5, 1985)

1. Remove flame arrester assembly from housing.

2. Place on flat surface with a contrasting background under the flame arrester such as, brattice cloth or a clean white cloth.

3. Adequate lighting is required; cap lamp lighting is not sufficient.

4. Visually inspect each side of flame arrester for openings or spaces, obviously greater than the triangular spaces of the core. These kinds of openings may have been caused by prying a screwdriver or other such objects against or through the flame arrester core during manufacturing or in mine maintenance. Flame arrester cores with such damage must not be permitted to be used on permissible equipment.

5. Visually inspect each side of the core for places where the windings of the flame arrester core appear to be separating such that gaps can be seen. If such gaps exist they must be checked as follows:

   a. The only measuring tool considered acceptable for performing this evaluation is an 0.018 inch calibrated plug gauge. (Sometimes called a wire gauge.) The plug gauge is to be mounted in a gauge holder. (Figure 1) weighing 1 to 1.5 ounces and projecting at least one inch out of the end.

FIGURE 1

   b. b. Grasp the gauge holder lightly between index finger and thumb. Place the wire tip at the point in question; making sure the plug gauge is vertical. Using only the weight of the gauge and holder see if it will enter the apparent gap. Do not attempt to force or wiggle the gauge through the opening.

   c. If the plug gauge enters the opening, the flame arrester core must not be used on permissible equipment.

6. Visually inspect the triangles in the flame arrester core (both sides) for triangles that appear to be larger than the rest. If such conditions exist, these openings must be checked as previously described in Section 5 a, b, c.

7. Finally, if the flame arrester core passes all of the above evaluations, a final check should be performed on at least 5 triangles on each side of the core with the procedure described in Section 5 a, b, c. In performing this check, the tip of the plug gauge must be placed against a specific triangular opening. If this special care is not taken, the evaluation will be invalid.

Illustration No 5 shows the MSHA procedure to check Crimped Ribbon Flame Arrestors

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